

Thomas (C. H.)

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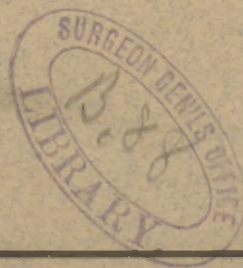
ADAPTABLE METRIC GAUGE.

BY CHARLES HERMON THOMAS, M.D.,

PHILADELPHIA,

Fellow of the College of Physicians, etc.

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## ADAPTABLE METRIC GAUGE.\*

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FIG. 1.

OF the three methods of numbering urethral instruments employed to any extent in this country, that known as the French system may be said to dominate, if not to have superseded, the others. No one attempts longer to defend the purely arbitrary English scale, with its practical inaccuracies and limited range of sizes; while the "American scale," recently proposed, though an improvement in some respects on the English, is lacking in that simplicity which it should possess to entitle it to general adoption.

According to the French system,—for it is truly a system,—each size in a set of catheters or bougies is derived from, and identical with, the number of *millimeters in circumference* which such instrument actually measures. Thus, while No. 1 is 1 mm. in circumference, No. 2 is 2 mm., No. 3 is 3 mm., and so on uniformly throughout.

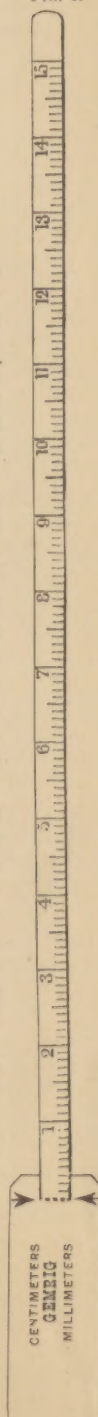
The American scale, like the French, is founded on the metric system, but its successive sizes increase by *half-millimeters in diameter*; its numbers are consecutive in units, however, and therefore correspond neither with the figures which represent diameters or circumferences. Practically it differs from the French in that it does away with one in every three of the French sizes, a somewhat questionable improvement, though the only merit claimed for it; but in doing this a new and arbitrary series of numbers is introduced,—a serious disadvantage. For, while No. 1 is 1 mm. in diameter, No. 2 is 1.5 mm., No. 3 is 2 mm., and so on with a widening disparity till No. 20 is reached, which is 10.5 mm. measured in the same manner.

It will readily be conceded that the almost universal demand among those engaged in general scientific work for unity of standard in measures of length, ca-

capacity, and weight, which has resulted in the wide-spread adoption of the metric system, has a practical and not a sentimental basis. The various branches of the science of medicine have need of the improved methods and means of ready interchange of results of observation and experiment, which have become common to allied sciences. And in the subdepartments of urethral, gynecic, and rectal surgery especially there is present urgent need of the establishment of a general system of measurement and record of the dimensions of the appliances employed, and indirectly, by means of these, of the calibre of the passages to which they relate.

A *General Scale* suited to this wide range of applications, and which shall combine the essential requisites of simplicity, definiteness, and convenience of use, together with universal scientific intelligibility, is undoubtedly practicable. For this purpose it is only required that the use of all conventional numbers or sizes, as such, be abandoned, and that there be adopted in their stead actual circumferential or perimetric dimensions, expressed in terms of the metric unit.

This proposition, while it includes the French urethral scale, as described, is a systematic extension of it, and fitly embraces all specula and dilators, together with their related explorers and fixed cutting instruments, for whatever part designed,—whether the male or female urethra, the rectum, vagina, cervix uteri, Exact size.



\* Exhibited to the Philadelphia County Medical Society, June 25, 1879.



oesophagus, Eustachian tube, or lachrymal duct. Considered in its practical relations, it forms a comprehensive system of unification, based upon the best known standard. For whatever the faults of the metric rule for general mechanical purposes, it is perfect for surgical uses; and the remarkable unanimity with which metric terms have been accepted as a part of the language of science gives promise, through their use in this connection, of valuable results; especially contributing to international uniformity.

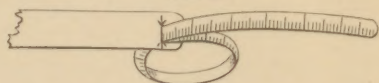
In denoting data in accordance with the General Scale, millimeters will naturally be used for the smaller instruments and passages, while for the larger—as rectal and vaginal—centimeters should be employed. The changed form of expression will then be, for example, 20 mm. instead of No. 20 catheter,—a gain in definiteness with no loss of brevity; and in place of Sims's No. 1 Vaginal Dilator, as at present, its equivalent 10 cm.: or 8 cm. as the proper substitute for No. 10 of English rectal bougies.

The Adaptable Metric Gauge renders the foregoing scheme directly practicable, and is a simple appliance, mechanically similar to the glover's measure, the outgrowth of an effort to secure the highest attainable accuracy and precision for purposes of record, comparison, and operative procedure. For instance: during several years I have made somewhat frequent use of Otis's Dilating Urethrotome, and, though using at different times the best procurable constructions of that admirable instrument, have found that a ready means of verifying or correcting its index was essential to its perfect working. One now in use, and an otherwise faultless piece of mechanism, being measured accurately over the knife in place, shows an excess of size over that registered of 4.3 mm. Such an error not recognized and provided against, in an operation of such delicacy as that of Otis for internal urethrotomy, whose only hope of success is founded on strict accuracy and correspondence of measurements, may at any moment be the source of mischief, or even of fatal results.

Experience of more than a year in the use of the gauge, as illustrated (Fig. 1), has proved that it is most conveniently made and used when printed upon strong parchment-paper or thin celluloid. It is then to be cut out, following the line of its bor-

ders; the broad end, which is the handle, is to be backed with cardboard and perforated along the dotted line at the beginning of the scale; the narrow end, which is the flexible measuring strip, is then to be bent backward and passed through the opening just made, when the instrument is ready for use. The object to be measured

FIG. 2.



being placed within the sliding loop (Fig. 2), and the ends being drawn upon in opposite directions, the dimensions in millimeters or centimeters may be read off from the point on the measure between the arrow-heads.

Viewed in the light of its uses, and being accurate to a fraction of a millimeter, the gauge is an "instrument of precision," adapted to ascertaining the dimensions of the perimeters of a great variety of forms in uniform terms, and possessing the special value of utilizing old appliances; for with it their equivalence under the general scale is at once determined. When contrasted with the ordinary scale or gauge-plate, the adaptable gauge will be seen to be possessed of several important advantages. It, unlike the former, has a great range of capacity; is as well fitted to measure instruments of irregular outline—urethrotomes, metrotomes, divulsers, folding specula, and the like—as perfect cylinders; and, moreover, is itself capable of being instantly verified by comparison with any standard metric rule.

1807 CHESTNUT STREET.

109 SOUTH EIGHTH STREET,  
PHILADELPHIA, JUNE 10, 1879.

CHARLES H. THOMAS, M.D.:

DEAR DOCTOR,—We are now using your Adaptable Metric Gauge as a correct guide in the manufacture of urethral and dilating instruments. It has been particularly serviceable in enabling us to bring the measurement of bougies, catheters, and all urethral cutting instruments to the point of absolute accuracy.

Thanking you for bringing it to our notice, we would state that we have made arrangements to produce them, and should be most happy to furnish members of the profession with your very useful appliance gratuitously.

Your views in regard to a *Universal Scale* are so evidently correct that we are prepared to conform to it.

We are, very respectfully, yours,  
J. H. GEMRIG & SONS.

DR. C. H. THOMAS'  
ADAPTABLE METRIC GAUGE.

From J. H. GEMRIG & SONS,  
108 S. Eighth St., Philad'a.

CENTIMETRE  
MILLIMETRE

